

PATENT CLAIMS

1. Complete ammunition round (1) intended to be loaded as a coherent unit primarily in electrothermal and/or electrothermochemical weapon systems, which round (1) comprises a propellant charge (6) for propulsion of a projectile (3) through a barrel and which projectile (3) is arranged on the front end (17) of the propellant charge, a bottom piece (5) which is arranged on the rear end (14) of the propellant charge (6), and a firing device (4, 4a, 4b) arranged, preferably detachably, on the bottom piece (5), characterized in that the round (1) is caseless and comprises an elongate inner component (2) for stiffening and holding together, which inner component (2) is arranged on or in close proximity to the rear end (18) of the projectile (3) and mounted, preferably detachably, on the firing device (4, 4a, 4b) through a central through-hole (15) arranged in the propellant charge (6), in that the propellant charge (6) consists of a load-absorbing, essentially completely combustible, externally cartridge-shaped, dimensionally stable block powder charge (6) which has such rigidity and strength and which propellant charge (6) is otherwise arranged in such a way, preferably attached to or at least arranged essentially adjacent to the projectile (3), the inner component (2), the firing device (4, 4a, 4b) and the bottom piece (5), that, in heavier ammunition as well, a considerable proportion of the loads which are detrimental to the functioning of the round (1) and can occur during normal storage, handling and use of the round (1) is taken up only via the propellant charge (6) and the inner component (2), and which block powder charge (6) comprises an, at least external, insulating surface, coating and/or application (9, 9a) which is nevertheless of insufficient rigidity and robustness to bear the abovementioned loads.

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2. Complete ammunition round (1) according to Claim 1, characterized in that the inner component (2) constitutes a load-transferring element, for example a rod or tube, anchored firmly between the projectile (3) and the firing device (4, 4a, 4b).

3. Complete ammunition round (1) according to one of the preceding claims, characterized in that the inner component (2) is made of a combustible material, for example a plastic composite.

4. Complete ammunition round (1) according to any one of the preceding claims, characterized in that the propellant charge (6) is attached to the component (2) via an adhesive connection.

5. Complete ammunition round (1) according to any one of the preceding claims, characterized in that the propellant charge (6) is arranged so as to engage in at least a rear part (8a, 11, 18) of the projectile (3) and/or a front part (8b, 22) of the bottom piece (5).

6. Complete ammunition round (1) according to any one of the preceding claims, characterized in that the propellant charge (6) consists of a multi-perforated (16), progressive block powder (6).

7. Complete ammunition round (1) according to any one of the preceding claims, characterized in that the propellant charge (6) comprises a plurality of part elements which are joined together by means of a suitable binder to form a finished, cartridge-shaped propellant charge (6).

8. Complete ammunition round (1) according to any one of the preceding claims, characterized in that the insulating surface (9a) comprises a non-load-bearing, at least outer, shrink film.

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9. Complete ammunition round (1) according to any one of the preceding claims, characterized in that the insulating coating (9) consists of a non-load-bearing dimeric or polymeric raw material comprising hydrocarbons, such as poly-para-xylylene.
10. Complete ammunition round (1) according to any one of the preceding claims, characterized in that the application (9) consists of painting or other covering by means of a solution or emulsion.
11. Complete ammunition round (1) according to any one of the preceding claims, characterized in that the insulating surface, coating or application (9, 9a) is moisture-repellent or moisture-proof.
12. Complete ammunition round (1) according to any one of the preceding claims, characterized in that the insulating surface, coating or application (9, 9a) is electrically insulating.
13. Complete ammunition round (1) according to any one of the preceding claims, characterized in that the insulating surface, coating or application (9, 9a) covers all sides (7a, 7b) of the propellant charge (6).
14. Complete ammunition round (1) according to any one of the preceding claims, characterized in that the bottom piece (5) is made of combustible material, suitably a fibre composite.
15. Complete ammunition round (1) according to any one of the preceding claims, characterized in that the firing device (4) consists of a plasma torch (4a).
16. Complete ammunition round (1) according to any one of Claims 1-15, characterized in that the firing device (4) consists of a fuse (4b).

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17. Method of manufacturing a caseless, complete ammunition round (1) which is loaded as a coherent unit primarily in electrothermal and/or electrothermochemical weapon systems, which round (1) comprises a propellant charge (6) which propels a projectile (3) through a barrel and which projectile (3) is arranged on the front end (17) of the propellant charge, a bottom piece (5) which is arranged on the rear end (14) of the propellant charge (6), and a firing device (4, 4a, 4b) arranged, preferably detachably, on the bottom piece (5), according to any one of Claims 1-16, the component parts of the projectile part (3) being assembled in a conventional manner, characterized in that the inner component (2) is mounted on the projectile part (3) via a connection (25), the propellant charge (6) is slipped onto the component (2), after which the bottom piece (5) is applied, and the firing device (4) is attached to the inner component (2), it being ensured that the propellant charge (6) closely adjoins the bottom piece (5) and the projectile part (3).

18. Method of manufacturing a caseless, complete ammunition round (1) according to any one of Claims 1-16, characterized in that the inner component (2) is first mounted on the bottom piece (5) via the firing device (4), then to be guided through the hole (15) of the propellant charge (6) and attached to the projectile part (3) via a front connection (25).

19. Method of manufacturing a caseless, complete ammunition round (1) according to any one of Claims 1-16, characterized in that the propellant charge (6) is applied to an inner rod (2) assembled with other component parts by the propellant charge (6) being divided into at least two sections which are joined at least to one another, but preferably also to the inner component (2), the projectile (3), the firing device

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(4) and/or the bottom piece (5), via a suitable connection.

20. Method of manufacturing a caseless, complete
5 ammunition round (1) according to any one of Claims 1-
19, characterized in that the propellant charge (6) is
manufactured from a suitably homogeneous, compression-
moulded powder block which is subsequently provided
10 with perforations (16) in a predetermined pattern and
number in order to bring about the desired
progressiveness.

21. Method of manufacturing a caseless, complete
ammunition round (1) according to any one of Claims 1-
15 20, characterized in that an insulation coating (9) is
applied over at least the outer sides and/or inner
sides (7a, 7b) of the propellant charge (6), via three
phases comprising vaporization of a dimeric or
polymeric raw material, the polymer or the dimer first
20 being transformed from solid phase to gas phase and
then, at a further increased temperature, being
transformed to a reactive monomer gas which is made to
polymerize on the propellant charge (6), a thin inner
and outer insulating surface layer (9) being deposited
25 on all accessible surfaces (7a, 7b).

22. Method of manufacturing a caseless, complete
ammunition round (1) according to any one of Claims 1-
21, characterized in that mounting also comprises a
30 suitable binder being applied between one or more of
the component parts making up the round (1).

23. Method of manufacturing a caseless, complete
ammunition round (1) according to any one of Claims 1-
35 22, characterized in that the propellant charge (6) is
already pre-insulated by means of any one of the said
insulations (9) when mounting takes place.

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24. Method of manufacturing a caseless, complete ammunition round (1) according to any one of Claims 1-23, characterized in that final insulation (9) of the round (1) is effected by coating, painting or other covering or by a thin, non-load-absorbing, moisture-repellent or moisture-proof outer surface or film (9a) being applied.

25. Use of the ammunition round (1) according to any one of the preceding claims, characterized in that the ammunition round (1) is used in other more conventional weapon systems than the said electrothermal and/or electrothermochemical weapon systems.

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